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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/773,615	02/06/2004	Jin-Sung Lee	678-1234 (P11102)	7749

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EXAMINER

FORD, JOHN K

ART UNIT	PAPER NUMBER
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3753

DATE MAILED: 02/14/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

6

Office Action Summary	Application No. 10/773,615	Applicant(s) LEE ET AL.	
	Examiner John K. Ford	Art Unit 3753	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 4/3/06 + 11/14/05.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 2-6 is/are pending in the application.
- 4a) Of the above claim(s) 3-5 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 2, 6 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Applicant's RCE and response of January 3, 2006 have been studied carefully. Claim 1 has been cancelled and, accordingly, claims 2 and 6 are examined here. Applicant's previous election of the first species of Figure 5, without traverse, is acknowledged, and, of the currently active claims, claims 2 and 6 have been identified as readable on the elected species. Claims 3-5 remain withdrawn as directed to non-elected species.

Applicant's latest argument in the January 3, 2006 response (page 4, fourth paragraph) is that JP '741 alone does not anticipate claims 2 and 6 because the cooling plate 21 is positioned on the rear side of the heating plate and does not constitute a pipe laid into a hollow bore. Applicant in an unfortunate typographical error appears to have left the word "not" out of the phrase "directly in contact." The examiner believes applicant intended to state the opposite of what was actually typed. Notwithstanding whatever applicant intended to state about JP '741, the examiner agrees with applicant's apparent conclusion that JP '741 does not anticipate claims 2 or 6. Having said that, the examiner is in complete disagreement with applicant with respect to Hisai et al and what it teaches. The cooling water in Hisai et al circulates through a cooling pipe 21 that is no different than the cooling pipe 105 in applicant's elected Figure 5. The cooling pipe in Hisai being exposed on all sides to the vaporized working fluid (16) in an inner space 12 (deemed to be a "bore", consistent with applicant's own usage of the word to describe his own disclosure) defined between a plurality of pillars 13, provides what applicant argues in paragraph 5 on page 4 of his January 3, 2006

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response (namely, “a path of the running cooling water to enlarge an area for transferring heat within a limited space”).

Regarding JP ‘795, applicant in his November 14, 2005 response, argues that the cooling pipe in Hisai can be placed to cut across division walls and not in the “bore.” The argument is unconvincing in view of the fact that in applicant’s own device, as illustrated in applicant’s Figure 4, the cooling pipe clearly cuts across division walls (in the radial direction) at many locations within the “bore” defining the vapor space. Moreover, the argument that the examiner is “inventing after-the-fact” is without foundation. Hisai clearly states in his disclosure (see the Abstract, for example) the improved cooling achieved by placing a cooling pipe 21 within a bore 12, notwithstanding applicant’s erroneous statement that such knowledge could only have been derived from (a hindsight reading of) applicant’s specification. The argument that the examiner has failed to make a “prima facie” case is similarly unconvincing and lacks any supporting analysis as to how applicant reaches such a conclusion. Finally, applicant confuses reader by misstating what Foglesonger et al and Flanigan et al were cited, by the examiner, to teach (namely the placement of a cooling pipe in a bore in a plate with an intermediate substance in the hollow space between the outside of the pipe and cavity defined by the bore).

Applicant argued that the amendment, in the July 14, 2005 response, that recites that the cooling pipe is laid “along the hollow bore” in the heat transfer plate

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distinguishes (now cancelled) claim 1 (and now by extension claims 2 and 6) from the prior art. The Examiner disagrees for reasons that are explained in the rejections that follow.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 2 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 2001-93795 (Figs 22-27) in view of Hisai et al. (US 2003/0192686).

JP '795 (Figs 22-27) shows all of the claimed features except a cooling pipe in the hollow bore(s) 515. A working fluid 540 is shown in the hollow bore(s) 515 in Figure 24. A heater is shown at 524 (Fig. 27). No cooling pipe is shown in the hollow bore(s) 515. For purposes of rejection here the open space 515 between supporting structures 530 shown in cross-section in Figure 24 and in plan view in either of Figures 25 or 26 is deemed to be a "hollow bore" in as much as these Figures have a strong resemblance to the "hollow bore" 131 shown in Figure 4 of the present application. The "hollow bore" of the present application appears to be no more than a cavity with a plurality of separators 133 linking the upper surface of element 103 with the lower surface of element 103. This is no different than what Figures 24, 25 and 26 of JP '795 show, i.e.

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many small division walls 530, with hollow bores (515) clearly formed between these small division walls.

Hisai teaches in the type of working fluid heater disclosed by JP'795, using a cooled pipe 22 located in the sealed chamber containing the working fluid. The chamber has a plurality of "pillars" 13 and there appear to be "hollow bores" formed in these pillars (see the phantom lines under elements 13 in Figure 3) for the cooling pipe 22 to span substantially the entirety of the sealed chamber as shown in Figure 4.

To have used such a cooling pipe in JP'795 to advantageously permit cooling of the semiconductor would have been obvious. Needless to say, the easiest modification to make to Figures 25 or 26 of JP '795 (i.e. the Samsung prior art system that applicant's here are attempting to modify) would have been to have placed the cooling pipe in the open space 515 between the division walls 530 (i.e. in the hollow bore(s) between the division walls 530). Such a placement would advantageously avoid having to compromise the strength of the device by chopping away at the division walls 530. If applicant contests this logic, please explain where else could one put the cooling pipe in JP '795 and still have it be in the hollow space 515 (Hisai clearly teaches the cooling pipe has to be in the hollow space 12).

Regarding claim 2, specifying the intended level of a working substance in an apparatus does not impart patentability to that apparatus. See In re Masham, 2 USPQ2d 1647 (BPAI 1987).

Claims 2 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 2003-53741 (Figure 5) in view of Hisai et al. (US 2003/0192686).

JP '741 shows a cooler 21 and a heater 14 arranged on the backside of a hollow heat transfer plate in Figure 5. Hisai teaches a cooling pipe 22 located in the sealed chamber (bore) of a heat transfer plate.

To have placed a cooling pipe 22 into hollow space 6 of JP '741 in place of element 21 would have been obvious to advantageously make the overall structure smaller and the cooling more efficient. See Hisai for a discussion of the specific advantages of using a cooling pipe 21 in a hollow bore 12.

Claims 2 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over any of the prior art as applied to claims 2 and 6 above [i.e. JP 2001-93795 (Figs 22-27) / Hisai et al. (US 2003/0192686) or JP 2003-53741 (Figure 5) / Hisai et al. (US 2003/0192686)], and further in view of Foglesonger et al (USP 4,998,584) or Flanigan et al (USP 6,081,414).

To the extent that it is necessary, and the Examiner does not believe that it is, Foglesonger and Flanigan both show that it is known to place or lay a heat exchange tube in a groove (or hollow bore) formed in a plate with the tube having a dimension smaller than the hollow bore that is filled by some intermediate heat transfer substance that carries the heat across the gap between the tube and the wall of the cavity. In the case of Foglesonger this intermediate heat transfer substance is boron nitride in an aqueous carrier and in Flanigan, brazing material, whereas in JP '795 or JP '741 the intermediate heat transfer substance is a perfluorocarbon. Nonetheless, Foglesonger and Flanigan each clearly teaches placing or laying a heat exchange tube in a hollow bore (groove) in a plate surrounded by an intermediate heat carrier, thereby reinforcing the Examiner's logic above.

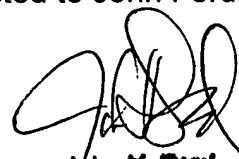
Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over any of the prior art as applied to claims 2 and 6 above [i.e. JP 2001-93795 (Figs 22-27) / Hisai et al. (US 2003/0192686) or JP 2003-53741 (Figure 5) / Hisai et al. (US 2003/0192686), with or without Foglesonger et al (USP 4,998,584) or Flanigan et al (USP 6,081,414)], and further in view of JP 4-338242.

Regarding the placement of the cooling pipe below the level of the working fluid as claimed in claim 2, JP '242 fairly teaches this at the right submerged heat exchanger and such a placement would advantageously maximize contact with the working fluid.

All claims are drawn to the same invention claimed in the application prior to the entry of the submission under 37 CFR 1.114 and could have been finally rejected on the grounds and art of record in the next Office action if they had been entered in the application prior to entry under 37 CFR 1.114. The claims 2 and 6 examined here appear to be the previously presented claims 2 and 6 rewritten in independent form. Accordingly, **THIS ACTION IS MADE FINAL** even though it is a first action after the filing of a request for continued examination and the submission under 37 CFR 1.114. See MPEP § 706.07(b). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Any inquiry concerning this communication should be directed to John Ford at telephone number (571) 272-4911.



John K. Ford
Primary Examiner